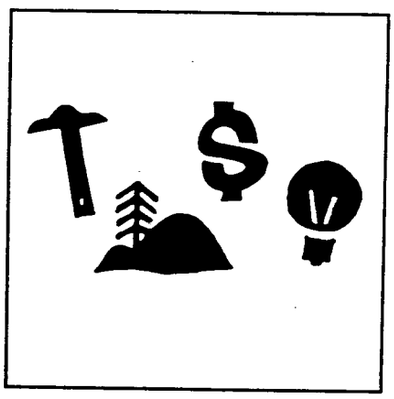
1978 Edition

Facilities Performance Profile



An Instrument to Evaluate School Facilities

CALIFORNIA DEPARTMENT OF EDUCATION
Bill Honig, State Superintendent of Public Instruction
Sacramento, 1988

Facilities Performance Profile

An Instrument to Evaluate School Facilities

Prepared by the
School Facilities Planning Division
CALIFORNIA DEPARTMENT OF EDUCATION

This document, first issued in 1978, was published by the California Department of Education, 721 Capitol Mall, Sacramento, CA 95814 (mailing address: P.O. Box 944272, Sacramento, CA 94244-2720).

1988

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FACILITIES PERFORMANCE PROFILE

An Instrument to Evaluate School Facilities

This publication is designed to inform architects and school administrators of performance standards for new school construction. It can help determine the worth of design proposals during the preliminary design stage and can aid in the evaluation of existing schools.

INSTRUCTIONS:

1. Read the statements carefully and evaluate the building according to the criteria. Place in the appropriate column the number which best indicates your rating. If the maximum number that may be earned for a single criterion is 2.0, the building may be rated from zero to 2.0. Note: Some criteria are so significant that, if rated zero, the validity of the entire project comes into question. These criteria have been marked with an asterisk (*).

2. When all statements in a category have been considered, write the total where indicated. Then place a dot in the appropriate circle of the graph. For example, a total of 5 under light would position the dot on spoke E, circle 5.

3. When the wheel graph has been marked for each category, connect the dots. The resulting geometric shape will be the profile of the building's rating. (See sample rating wheel.) There are ten categories to be rated, and each category has a maximum value of ten points, for a total of 100. The evaluator is thereby able to rate the building in percentage points.

A perfect performance evaluation would place all dots in the circle ten spaces from the center of the wheel for a score of 100 percent. For such a score to be earned, a building would have to be technically very sophisticated. Performance is partly dependent on money; however, a limited budget would not necessarily produce a small area on the circle graph or a low numerical score indicating a poor performance. Inadequate funding for construction can prevent the best architect from earning a perfect score, but it should not prevent the making of decisions which reflect the architect's skill and knowledge.

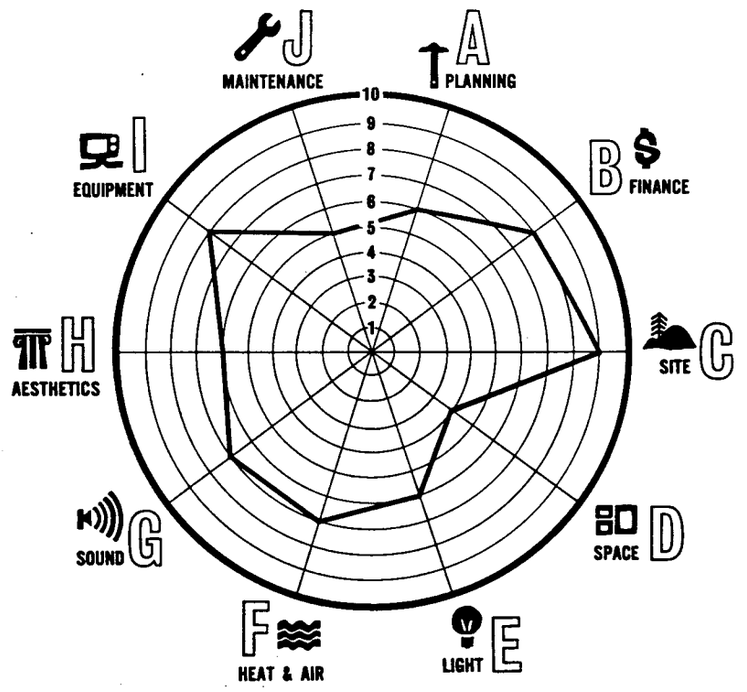
SAMPLE PROFILE RATING

10 Excellent
8-9 Good
6-7 Average
4-5 Poor
0-3 Not Acceptable

PROFILE RATING WHEEL

AN INSTRUMENT TO EVALUATE SCHOOL FACILITIES

A. PLANNING	6	E. LIGHT	6	I. EQUIPMENT	8
B. FINANCE	8	F. HEAT & AIR	7	J. MAINTENANCE	5
C. SITE	9	G. SOUND	7		
D. SPACE	4	H. AESTHETICS	6	TOTAL RATING	66



Project HARPER VALLEY JR. HIGH SCHOOL Date 1-20-78

District JACKSON SCHOOL DIST. Evaluator PROF. HIGGINS

The sample shown is the rating of a hypothetical school with an overall evaluation score of 66. Many existing California schools would rate no higher. The rating for each category can be transferred to the wheel by marking a point on each spoke according to instructions and connecting the marks. The result is a geometric shape or profile rating of the building. A balanced solution (the same rating for each category) would produce a near circle. The profile illustrated here is somewhat out of balance, but it demonstrates the strengths and weaknesses in each category. Finance, site, and equipment have been rated as good, but space and maintenance have been rated as poor.

	Points possible	Rating
1. ARCHITECT SELECTION The project architect was selected after an evaluation of three or more firms, including: a. Field evaluation of previous work on schools b. Review of staff and office operation of each architect considered c. Identification of personnel who would be responsible for project design, engineering, coordination, and supervision	2.0	
2. PLANNING TEAM A building committee was formed from district personnel to study housing needs, in cooperation with the architect and the best planning consultants and education specialists available to the district.	2.0	
3. CONCEPTS The planning team gave careful consideration to contemporary innovations in education and school plant organization such as: a. Flexible scheduling patterns b. Continuous growth programs with individual instruction activities c. Cooperative teaching or team teaching with large and small groups d. Extensive use of audiovisual techniques and electronic communications e. Teacher work centers and material centers in proximity to academic instruction areas f. Plant organization permitting the school to operate with small, independent subschools when desired	2.0	
4. NEEDS DEFINED[1] Documentation of required facilities by the committee included: a. Statement of the district's educational philosophy, approved by the governing board b. Study of projected enrollments and community growth patterns		

[1] Guide for the Development of a Long-Range Facilities Plan. Sacramento: California State Department of Education, 1986.

	Points possible	Rating
c. Study of the use of existing facilities d. Educational specifications which carefully define curriculum, student grouping and scheduling, organization, methods of instruction, and activities to be housed	2.0	
5. TRANSLATION The building committee translated its educational specifications to the architect by discussing in detail the documented information during initial design phases. It questioned, evaluated, and considered alternatives to the architect's preliminary studies before giving approval to design solutions.	2.0	
TOTAL	10.0	

	Points possible	Rating
1. ASSESSMENT OF NEEDS The district maintains a long-range financial program for school construction, including an estimate of funds necessary to finance: a. Current housing needs b. Future housing needs based on a five-year projection of enrollment (It is recommended that districts which anticipate little or no enrollment increase maintain a ten-year projection, including the replacement of outmoded facilities.)	**2.0**	
2. ASSESSMENT OF RESOURCES Before programming this project, the district obtained complete, up-to-date information on assessed valuation, tax rate, bonded indebtedness, borrowing limits, and sources of financial aid.	**2.0**	
3. LEVEL OF FUNDING Money budgeted for this building project was sufficient for site purchase, site development, construction, engineering fees, and furniture and equipment on the basis of life-cycle costing.	**2.0**	
4. ECONOMIES Economies were achieved by: a. Purchasing the site well in advance of need b. Using professional programming techniques and planning processes to determine actual facilities needed c. Using modular construction and prefabricated components d. Selecting materials which provide maximum service relative to initial cost and fire insurance rates e. Constructing flexible spaces for maximum space use	**2.0**	
5. BIDDING Competitive bidding procedures: a. Provided plans and specifications which were complete, accurate, and clearly written and which left very little to the discretion of contractors b. Required a prebid conference between the architect and general contractors to review and clarify plans and specifications c. Allowed ample time for preparing bids d. Made use of additive rather than deductive alternates e. Required a complete breakdown of items and their cost before approval of change orders	**2.0**	
TOTAL	**10.0**	

	Points possible	Rating
1. SIZE The site size is adequate for present and future buildings, playing fields, parking, bike racks, and bus loading. The ratio of length to width does not exceed 3:5.	2.0	
2. LOCATION The site is located close to the homes of the students who will attend the school and to community facilities such as parks, swimming pools, libraries, and recreation centers. The location of a school on this site will not adversely affect neighborhood values. The site was reviewed by appropriate local city and county jurisdictions.	2.0	
3. SAFETY; SOUND AND AIR QUALITY The site is located away from freeways, railways, dams, earth faults, aircraft flight patterns, dangerous traffic intersections, high-voltage lines, ravines, and other hazards or nuisances.	1.0*	
4. ACCESSIBILITY Good access and dispersal roads are available to the site.	1.0	
5. UTILITIES Utilities, including gas, electricity, water, sewer lines, and storm drainage lines, are adequate for the present and future needs of the school plant and are available close to the site.	1.0	
6. CONTOURS The topography provides drainage without the need for erosion control and sufficient near-level areas for buildings, playfields, and parking to avoid excessive soil excavation or fill.	1.0	

*Critical factor.

	Points possible	Rating
7. PRESERVATION The site can be developed for school facilities and still retain existing trees, shrubs, streams, outcroppings, interesting topography, and other natural features.	1.0	
8. DEVELOPMENT The site master plan includes a layout for all physical education facilities and landscaping. If initial funds are inadequate for complete site development, the district should implement a long-range financial program to complete the work.	1.0	
TOTAL	10.0	

	Points possible	Rating
1. SIZE AND SHAPE The size and shape of all instructional spaces are determined by the number of occupants and their activities. (Minimum area recommended for normal classroom functions is 30 square feet [2.8 square metres] per occupant at maximum loading.)	2.0*	
2. CONSTRUCTION The basic building shell is framed so that interior columns are spaced at least 30 feet (9.2 metres) apart in both directions, and the lighting and ventilating systems are integrated with structural framing. (Integrated design should permit space to be divided by relocating walls into space geometries no greater than 15 feet by 15 feet [4.6 metres by 4.6 metres].) Good weather protection is provided at entranceways to buildings.	2.0	
3. FLEXIBILITY Maximum consideration is given to the use of nonbearing, easily relocatable interior walls or space dividers. (Freestanding units of furniture or cabinets are recommended in preference to demountable partitions or folding walls.)	2.0	
4. SCALE Ceiling heights for typical classroom spaces with direct lighting are a minimum of 9 feet 6 inches (2.9 metres). For classroom spaces with indirect lighting, ceilings are at a height approved by an illumination engineer. Soffits between coffered class areas may be as low as 8 feet (2.4 metres). (See Section G, "Sound.") Recommended ceiling heights for major areas of loft space intended for use as a single space from time to time are as follows: Average: Ten feet (3 metres) for areas over 800 square feet (74 square metres) Average: Eleven feet (3.35 metres) for areas over 1,200 square feet (111 square metres) Average: Twelve feet (3.7 metres) for areas over 1,600 square feet (148 square metres)	1.0	

*Critical factor.

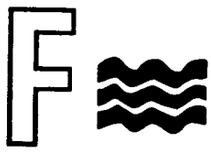
	Points possible	Rating
5. UTILIZATION A large percentage of the total enclosed space is available for educational functions. Consideration has been given to space necessary for storage and staff needs. Lobbies, corridors, mechanical rooms, and similar spaces are minimal in size or have been eliminated. Physical barriers such as steps have been eliminated as much as possible.	2.0	
6. EXPANDABILITY The design allows for potential increased enrollment, additions, and changes in function.	1.0	
TOTAL	10.0	

	Points possible	Rating
1. QUANTITY The electric lighting system is designed to permit minimum visual performance equivalent to an effective sphere illuminance (ESI) of 55 footcandles (592 lux) on the student's task.	2.0*	
2. BRIGHTNESS Light sources, such as a window or the diffuser of a direct luminaire fixture, have an average brightness that does not exceed five times the brightness of the student's task. Large source areas of brightness, such as the reflective ceiling above an indirect fixture of a ceiling system with 50 percent or more of the total area in luminaires, do not exceed three times the task brightness. Visual comfort probability (VCP) is 85 or more.	2.0*	
3. REFLECTANCES Interior surfaces meet reflectance values of: 80 to 90 percent for ceilings 50 to 80 percent for walls 25 to 50 percent for floors and furniture	2.0	
4. VIEW WINDOWS Where feasible, windows are provided and located for outside viewing. (Windows with a minimum width of 12 feet [3.7 metres] and a maximum sill height of 32 inches [81 centimetres] are recommended.) View windows also serve as emergency exits where possible.	1.0	
5. ENERGY CONSERVATION CONCEPTS a. Screening. Direct sunlight, the brightness of the sky, snow glare, and other sources of extreme brightness are screened from building interiors by glare-reducing glass, building overhangs, or other cutoff devices. Maximum brightness from exterior sources does not exceed 300 footlamberts (1,028 candelas per square metre). b. Lighting. Lumens per watt are kept high in comparison with the output of currently available fixtures, and wattage per square foot is kept low.		

[2]See also California School Lighting Design and Evaluation. Sacramento: California State Department of Education, 1978.

*Critical factor.

	Points possible	Rating
c. Natural light. When provided, natural light is considered as to energy trade-offs, with consequent increases of inefficiencies in the heating, ventilating, or air cooling systems. Natural light is considered especially for corridor, toilet, shower, locker, storage, and service areas.		
d. Localized control. Localized switching is provided for each 250 square feet (23 square metres), more or less, of instructional area. Where natural light is provided, localized switching for that area is provided. All interior lighting, except emergency and night lights, is controlled by a time clock. All exterior lighting is controlled by photosensors.		
e. Heat. Heat generated by light fixtures is considered in the overall design and is directly exhausted when not needed or is recovered for future use.	2.5	
6. AUDIOVISUAL		
Spaces for audiovisual instruction have lighting controlled by dimmers down to one to five footcandles (11 to 54 lux), with provisions for darkening.	0.5	
TOTAL	10.0	



HEAT & AIR

	Points possible	Rating
1. TEMPERATURE The inside air temperature of all instruction areas can be maintained at a minimum of 68 degrees Fahrenheit (21 degrees centigrade) during winter months and a maximum of 80 degrees Fahrenheit (27 degrees centigrade) during summer months for all hours of normal occupancy. Two-position thermostats are inaccessible except to identified responsible personnel. All mechanical heating, ventilating, and air cooling systems are controlled by seven-day time clocks set to turn off when not needed.	2.0*	
2. INSULATION Heat gain or loss is minimized with energy-responsive concepts such as high-reflectance roofing, windows, and walls shielded from direct sunlight; thermal insulation for exterior walls, ceiling, and roof; air exhaust of attic spaces; insulating glass; weather stripping at exterior doors and windows; two sets of doors (a vestibule) at each entrance and exit; and so on. Building mass is considered as a basis for design.	2.0	
3. OUTSIDE AIR When conditions such as low outside noise levels permit, adequate air exchange is provided for instruction areas by natural means such as prevailing breezes or convection. Natural systems, when provided, are automatically or readily controllable during heating and cooling cycles. Mechanical systems, when provided, use outside air for cooling (economizer cycle) to the extent possible (six to eight air changes per hour) and provide code minimums only during heating and cooling cycles. Generous natural ventilation systems are provided for all shower, locker, and toilet rooms. Independent exhaust systems, of the gravity or mechanical type, are provided for kitchens, science and homemaking laboratories, and other spaces, with special requirements for removing odors or air impurities.	2.0	

*Critical factor.

	Points possible	Rating
4. DISTRIBUTION		
The air distribution system ensures uniform air movement throughout all major spaces. It is designed for easy relocation of air grilles and thermostatic controls to permit relocation of interior walls. (Forced air systems with flexible ducts are recommended. Unit ventilators and similar packaged units with adjacent air supply and return are not generally acceptable.)	**2.0**	
5. SYSTEM DESIGN		
The mechanical system is engineered as the result of a careful exploration of the feasibility of various engineering concepts. Special consideration is given to ease of access, maintenance, and operating costs; the degree of flexibility provided by the proposed solutions; and local climatic and geographic conditions.		
The following is a basis for design: a. Basic energy-responsive concepts are included, such as building configuration, orientation, and interior circulation (to reduce the incidence of exterior door openings and closures). b. Life-cycle costing. c. Consideration is given to alternate and nondepletive energy sources, such as solar or wind power, either as an aspect of initial design or retrofit. Water for swimming pools and domestic use is solar-heated. d. Reasonably short duct and piping runs are provided for even and quiet air distribution. e. Water heater is located close to points of usage, and hot water pipes are well-insulated. Both individual and master controls are provided at showers. f. Heat recovery and cogeneration systems are considered. g. Consideration is given to the generous storage of heated or chilled water to allow cost- and energy-saving measures such as running electric chillers at night. h. Ability of staff or local available maintenance firms to maintain systems and equipment is specified. i. Compatibility of systems and equipment with other systems in the district is specified for aid in staff training and stocking of spare parts.		
Design concepts and operational requirements of all systems have been made clear to initial occupants and are readily available in an easy-to-understand form for current occupants. A system is established to ensure ready availability for future occupants.		
Meters are provided so that energy consumption of individual buildings and functions can be readily monitored and compared.	**2.0**	
TOTAL	**10.0**	

	Points possible	Rating
1. SITE PLANNING Buildings for music, industrial arts, physical education, and other activities which produce great amounts of sound energy are located away from areas of quiet activity. Potential noise interference problems are avoided by means of basic design.	1.0*	
2. INSULATION Materials and techniques such as sound seals, double glazing of windows, and heavy masonry walls are used to screen out external sources of noise such as aircraft, railroads, and freeways.	2.0*	
3. BUILDING SHAPE Acoustical considerations such as the need to maintain and distribute sound are properly engineered and are major factors in determining the shape, geometry, and selection of wall and ceiling materials in auditoriums, music rooms, large-group instruction rooms, and similar spaces where good sound is critical.	2.0*	
4. CONSTRUCTION Architectural construction reduces unwanted sound from light ballasts, mechanical equipment, and plumbing and prevents leakage of sound through ducts, electrical receptacles, and attic spaces.	2.0*	
5. ISOLATION In open classroom areas where several groups may utilize adjacent space, maximum design consideration is given to absorbing sound. (Use of acoustically treated deep coffered ceilings to pocket sound, materials such as carpeting to absorb sound, and ambient sound to mask noise is recommended.)	2.0*	
6. ABSORPTION Sufficient sound-absorbing materials are provided and located in instruction areas to correct excessive sound reverberation.	1.0*	
TOTAL	10.0	

*Critical factor.

H

AESTHETICS

	Points possible	Rating

1. APPROPRIATENESS

Design characteristics of the school are appropriate to the community and region where the school is located:

a. Native materials are used when feasible.
b. Scale of buildings is compatible with residential architecture.
c. Landscaping complements the existing landscaping of the neighborhood.
d. Elements such as roof overhangs, arcades, or covered walks and the number of windows are determined by local climatic conditions and energy conservation. Minimum number of windows are provided, and the windows are designed to provide visual relief from the interior. (Narrow slit windows do not meet this requirement.)

2.0

2. NATURAL ATTRIBUTES

The site plan exploits and preserves the best existing elements of natural landscaping and topographical features. Buildings are oriented to views or vistas. Grounds adjacent to buildings are landscaped, and the site development for physical education, recreation, and parking is complete.

2.0

3. HUMANISM

The school plant mirrors the human, social, and educational processes which it houses:

a. A site plan is organized to create a variety of outdoor spaces and environments which augment the educational program.
b. Buildings which look like factories or are sterile in appearance are avoided by the use of materials, textures, and detailing that create interest with shadows, sunlight, and stimulating colors.
c. Murals, sculptures, and other works of art are used.
d. Buildings are scaled to the age of the schoolchildren.
e. Screens or grilles are designed not to look prison-like when required for security or the prevention of vandalism.

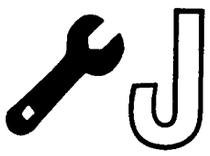
2.0

	Points possible	Rating
4. SYNTHESIS The architect avoids arbitrary building forms and design features which represent gimmicks or clichés. The buildings represent a logical and balanced integration of technical knowledge, engineering, and artistic concepts. Lighting, air conditioning, and related energy-responsive elements, such as solar collectors, windmills, and so on, are integrated into the total design.	2.0	
5. CHARACTER The architectural solution is orderly, pleasant, and appropriate to contemporary education--a physical environment to satisfy emotional needs and stimulate spiritual and intellectual growth.	2.0	
TOTAL	10.0	

EQUIPMENT

	Points possible	Rating
1. QUANTITY Furniture and equipment needs are itemized for each instruction area according to the educational program and are provided as required by this survey.	2.0	
2. COMFORT Chairs, tables, lavatories, and toilets are suitable to the age and size of the children who use them. Furniture is selected for comfort and informal use in lieu of traditional desks, tables, and chairs.	2.0*	
3. MOBILITY Furniture and equipment, including tables, chairs, cabinets, and appliances, are lightweight and are designed for mobility. (Special feet or casters are generally required for furniture to be used on carpeted floors.)	2.0	
4. FLEXIBILITY Cabinetwork is designed to hold the materials to be used. (It is recommended that storage cabinets have interchangeable drawers and adjustable shelving and that all major components be modular in design.)	1.0	
5. MAINTENANCE Furniture and equipment are constructed and surfaced with plastics, vinyl coatings, aluminum, and other materials that require little refinishing or repair.	1.0	
6. INSTRUCTION WALLS Interior walls and partitions are designed for use as tackboard surfaces and as anchors for chalkboards, pegboards, map rails, and shelving.	1.0	
7. SAFETY Furniture, equipment, and play apparatus are designed to prevent structural failure or breakage and to reduce the possibility of accidental injury to the user.	1.0	
TOTAL	10.0	

*Critical factor.



J

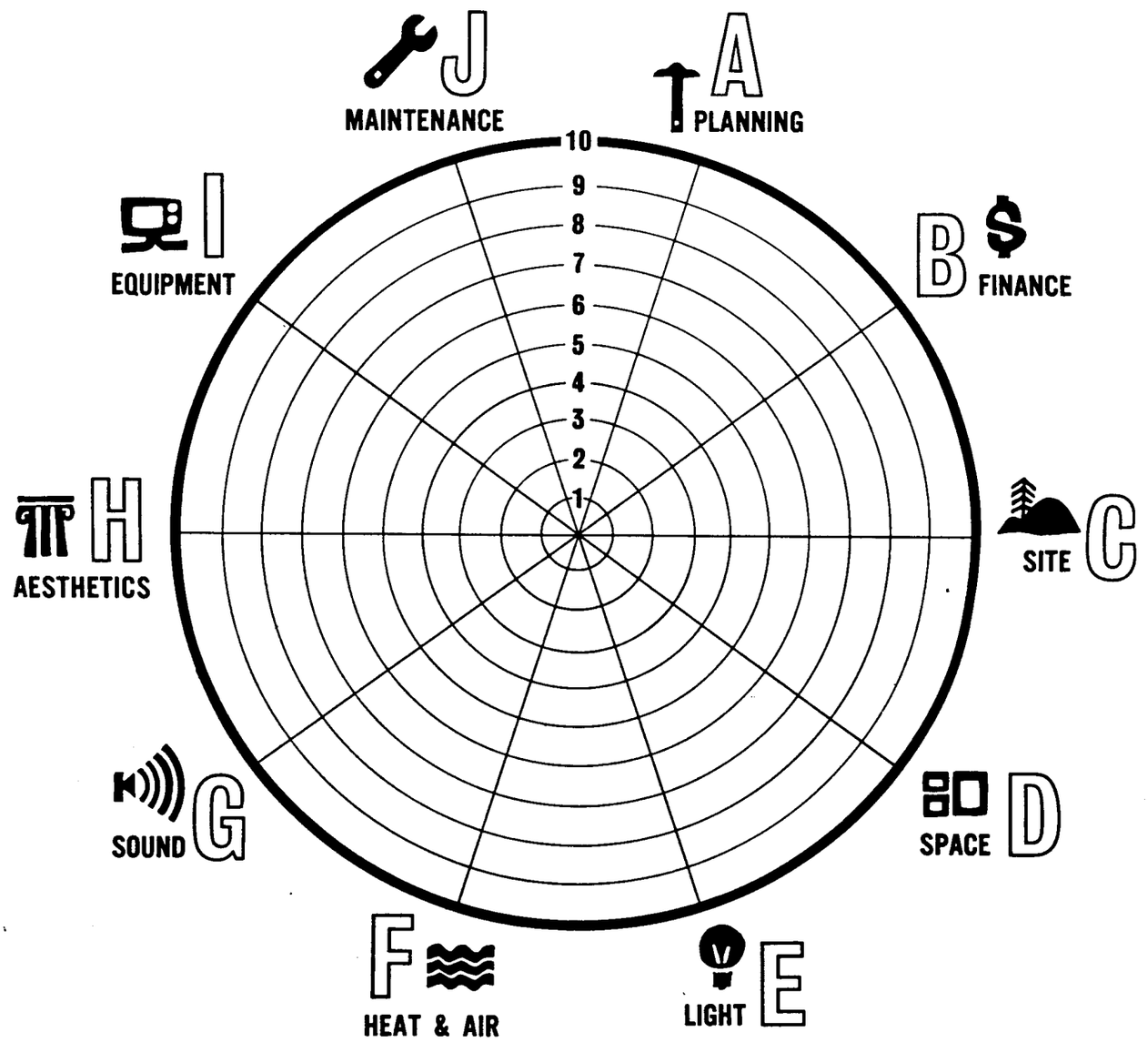
MAINTENANCE

	Points possible	Rating
1. SITE DEVELOPMENT The total site area allocated to landscaping which requires gardening does not exceed 200 percent of the total enclosed building areas. Outdoor parking areas, curbing, sidewalks, and hardcourt areas are surfaced with permanent-type materials. Automatic sprinkling is provided for turfed areas.	3.0	
2. EXTERIORS Materials selected for exterior walls, fascias, and soffits require little or no maintenance.	2.0	
3. INTERIORS Interior walls and ceilings are surfaced with materials that require little or no refinishing. Floor materials are easily maintained. (Use of carpeting is recommended where feasible.)	2.0	
4. ROOFING Selection and application of roofing conforms to standards for obtaining a 20-year life-expectancy guaranty bond.	1.0	
5. DURABILITY Underground plumbing and utility lines are protected from electrolysis and corrosion. Window sash, gutters and downspouts, flashing, and other items of metal exposed to the weather are plated, anodized, or specially treated or are made of alloys which are corrosion-resistant.	1.0	
6. QUALITY Hardware, plumbing fixtures, fenestration, and appliances are specified as commercial grade or better. Compatibility of systems and equipment with other systems in the district is specified for such reasons as staff training and stocking of spare parts.	1.0	
TOTAL	10.0	

PROFILE RATING WHEEL

AN INSTRUMENT TO EVALUATE SCHOOL FACILITIES

A. PLANNING	_____	E. LIGHT	_____	I. EQUIPMENT	_____
B. FINANCE	_____	F. HEAT & AIR	_____	J. MAINTENANCE	_____
C. SITE	_____	G. SOUND	_____		
D. SPACE	_____	H. AESTHETICS	_____	TOTAL RATING	_____



Project _____ **Date** _____

District _____ **Evaluator** _____

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